

## FASTENING STRAP STRUCTURE

### BACKGROUND OF THE INVENTION

The present invention is related to an improved fastening strap structure including a strap body made of plastic material by molding and at least one flexible metal reinforcing string integrally embedded in the strap body. The reinforcing string extends in a direction identical to the extending direction of the strap body. The metal reinforcing string enhances tension strength and shear strength of the fastening strap so that the fastening strap can be used to tie large-size or heavyweight articles with greater fastening force and the safety in use of the fastening strap can be ensured.

A fastening strap is used to tie articles for easy transfer. An automatic or semiautomatic tier is used to apply the fastening strap to the articles. A domestically used fastening strap is used to tie small-size lightweight articles. Therefore, the safety in use of such fastening strap is not highly required. However, when tying large-size and heavyweight articles, such fastening strap will be unable to bear the load of the articles and it is necessary to use fiber rope to tie the articles. This is quite inconvenient.

Various kinds of improved fastening straps have been developed for solving the above problem. Various kinds of fibers are added to the fastening straps to enhance the tension strength and shear

strength thereof. However, such fastening straps still have insufficient structural strength and can be hardly used to tie up heavyweight articles.

## SUMMARY OF THE INVENTION

It is therefore a primary object of the present invention to provide an improved fastening strap structure including a strap body made of plastic material by molding and at least one flexible metal reinforcing string integrally embedded in the strap body. The metal reinforcing string enhances tension strength and shear strength of the fastening strap so that the fastening strap is not likely to be torn apart by great tension or shearing force. Therefore, the safety in use of the fastening strap can be ensured.

The present invention can be best understood through the following description and accompanying drawings wherein:

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the fastening strap of the present invention, in which the fastening strap has bevel teeth and is flat;

Fig. 2 is a sectional enlarged view of a part of the fastening strap according to Fig. 1;

Fig. 3 is a perspective view of the fastening strap of the present invention, in which the fastening strap has right sharp

teeth and is flat;

Fig. 4 is a perspective view of the fastening strap of the present invention, in which the fastening strap has square cross-section;

Fig. 5 is a perspective view of the fastening strap of the present invention, in which the fastening strap has circular cross-section and annular teeth;

Fig. 6 is a perspective view of the fastening strap of the present invention, in which the fastening strap has circular cross-section and spiral teeth;

Fig. 6A is a cross-sectional view according to Figs. 5 and 6;

Fig. 7 is a perspective view of the fastening strap of the present invention, in which the fastening strap has elliptic cross-section;

Fig. 7 is a perspective view of the fastening strap of the present invention, in which the fastening strap has elliptic cross-section;

Fig. 8 is a perspective view of the fastening strap of the present invention, in which the fastening strap has elliptic cross-section and transverse trapezoid teeth; and

Fig. 9 is a perspective view of the fastening strap of the present invention, in which the fastening strap has flat cross-section and longitudinal trapezoid teeth.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please refer to Figs. 1 to 9. The fastening strap structure

of the present invention includes a strap body 20 made of plastic material by molding and at least one metal reinforcing string 10 integrally embedded in the strap body 20. The reinforcing string 10 extends in a direction identical to the extending direction of the strap body 20. The face of at least one side of the strap body 20 is formed with a series of stop teeth 21 which can be trapezoid teeth, V-shaped teeth, bevel teeth, straight teeth or other teeth with different patterns. The cross-section of the strap body 20 can be flat ( as shown in Figs. 1 and 3 ), elliptic ( as shown in Figs. 7 and 8, circular ( as shown in Figs. 5 and 6 ), square ( as shown in Fig. 4 ) or polygonal ( as shown in Fig. 9 ). The metal reinforcing string 10 is embedded in the strap body 20 so that the strength of the strap body is greatly enhanced.

In the case that the metal reinforcing string 10 is a multi-strand cable, in comparison with the conventional fiber string, the metal reinforcing string 10 has flexibility not less than that of the fiber string. In addition, the metal reinforcing string 10 has tension strength and shear strength much greater than those of the fiber string. Therefore, the strength of the fastening strap is apparently enhanced. When using the fastening strap to tie a large-size and heavyweight article, the safety is ensured. In addition, the stop teeth 21 formed on outer face of the strap body 20 enable the fastening strap to automatically fasten the article. Therefore, the fastening strap can be conveniently used.

The above embodiments are only used to illustrate the present

invention, not intended to limit the scope thereof. Many modifications of the above embodiments can be made without departing from the spirit of the present invention.